Project Name: _____ **Project Number:** _____

CFLHD Project Manager: _____ **A/E or Hwy Design Mgr:** _____

Originator: _____ **Date:** _____

15% DEVELOPMENT CHECKLIST **4R Projects Only** **Originator: "INITIAL" in block to indicate those elements completed, including incorporation of data, place an "I" in the block to indicate those elements that are incomplete, or write "N/A" to indicate those elements not applicable to the project. Resubmit the checklist as necessary until all applicable activities are complete.**	**ORIGINATOR (Initials)**
ACTIVITIES STARTING PRIOR TO THE 15% SUBMITTAL	
E0 activity – Environmental Scoping Determine need, issues, and concerns. *This activity will continue into the 15% design development phase.*	
S1 activity – Initial Survey and Mapping Perform initial survey work to establish control and initial data for mapping and Right-of-Way	
U1 activity – Identify and Locate Utilities This activity includes the compilation of utility facilities from available records and field locations. *This activity will continue through the 30% design development phase*	
GENERAL	
Prepare preliminary title, typical sections, plan and profile and cross section plan sheets, and roll plots with horizontal and vertical alignments for each of the alternative alignments	
Close coordination between the alternative analysis activities and the environmental activities is necessary. This includes activities before and after the 15% submittal	
Calculate quantities for major items for each alternative alignment; estimate minor items based on historical information for the type of work or group like items as categories for cost estimating.	
Gather traffic and accident data.	
TITLE SHEET	
Project Name & Number shown	
Length of alternative alignment shown	
County, State shown	
North Arrow & Graphic Scale shown	
Signature Blocks are appropriate for the funding source	
Location Map shows:	
Proposed Begin & End Stations of Alternative Alignments	
Distances to Nearest Large Destinations	
FP-XX Specification Reference shown	
Key Map of State shown with arrow to approximate project location	
Design Designations included for all major roadways (not only mainline). Including current traffic data, 20-year estimated traffic, design hourly volume, design speed, and truck percentage	
Index to Sheets	
Metric cell on projects using the International System of Units (metric)	
Plans Prepared By and Prepared For:	
CFLHD's Project Managers and Lead Designers or Consultants Name	

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Noticeable stamp stating percentage complete	
TYPICAL SECTION(S) *Develop typical sections for each alternative alignment*	
Typical Section – mainline, includes the following:	
Crown	
Roadway Width(s) – Lane, shoulder, foreslope, and ditch	
Edge of Traveled Way and edge of shoulder	
Cross-slopes conform to guidelines in the PDDM	
Provide sufficient dimensions to construct the work	
Construction, Clearing, and Seeding Limits	
Preliminary geotechnical and pavement recommendations are reflected in the structural section	
Location of profile grade and hinge points shown	
Method of superelevation on curves (detail)	
Clear Zone offset shown	
EARTHWORK SUMMARY	
Mass Haul Diagram graph developed for each of the alignment alternatives	
Provide earthwork reports upon request	
HIGHWAY DESIGN STANDARDS	
Develop project design standards using CFLHD and AASHTO guidelines (Green Book & Roadside Design Guide). Preliminary design incorporates: design speed, lane width, shoulder width, bridge width, structural capacity, grade, stopping sight distance, cross slope, superelevation, horizontal and vertical clearances, clear zone, roadside barriers, end treatments, and curve widenings for each alternative under consideration.	
Determine appropriate design vehicle	
PLAN AND PROFILE PLAN SHEETS	
Develop plan and profile sheets showing each alternative alignment. The plot scale of plan and profile sheets is, default is 1:1000 (metric) and 1"=100' (U.S. Customary). A plot scale of 1:2000 (metric) or 1"=200' (U.S. Customary) may be used on projects with a length greater than 20 kilometers (12.4 miles) to reduce the number of sheets. The Task Order defines the scales to be used.	
Include the same information as required for the Plan and Profile Roll Plots	
PLAN AND PROFILE ROLL PLOTS	
Develop plan and profile showing each alternative alignment. The plot scale of roll plots is, default is 1:1000 (metric) and 1"=100' (U.S. Customary). Use 1:500 (metric) or 1"=50' (U.S. Customary) on projects with tight contours, tight alignment, cluttered planimetrics, etc. The Task Order defines the scales to be used.	
Plan	
Show existing private property right-of-way, as a minimum show public/private lands	
Preliminary horizontal alignment	

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Develop and refine design concepts and alternatives. Design reflects consideration of significant design constraints	
Curve Data – curve name, delta, radius, tangent length, curve length, spiral lengths, and superelevation shown	
Edge of Existing Roadway Shown	
Limits of Disturbance shown (includes, Cut & Fill Slope Stake, Rounding, & Clearing)	
Control Points – Point number and symbology (elevations not shown)	
Planimetric features	
Existing Creeks and Rivers w/Correct Names	
Show preliminary layout of pullouts	
Road Approaches	
Public road intersections have preliminary design	
Show location for minor approach roads with standard symbol	
Show guardrail, retaining wall, and paved ditch symbols	
Existing Utilities (power, phone, & buildings). Show all utilities mapped during the S1 activity.	
Index contour lines show elevations (elevations are readable)	
Profile	
Develop and refine design concepts and alternatives	
Existing ground line shown and labeled	
Proposed profile grade shown and labeled – maximum gradient not exceeded.	
Length of Vertical Curves, K-Values, and Stopping Sight Distance shown	
Grid elevations	
Profile grade agrees with Typical Section grade point location	
VPI's Stations and Elevations	
ROAD APPROACHES	
Develop preliminary alignment of major intersections	
PARKING AREAS	
Develop preliminary layout of parking areas	
HYDRAULICS	
Incorporate preliminary Hydraulics recommendations – major drainages	
H1 activity – Preliminary Hydraulics Recommendations Initial hydrology/hydraulics investigation and analysis to prepare a Reconnaissance and Preliminary floodplain analysis Report and technical memorandum on proposed design criteria and computational methods	
GEOTECHNICAL	
Incorporate preliminary Geotechnical recommendations	

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G1 activity – Preliminary Geotechnical Initial geotechnical investigation and analysis to prepare Geotechnical Evaluation Memorandum. *The activity includes the development of an Interim, Draft, and Final Preliminary Geotechnical Evaluation Memorandums.*	
ENVIRONMENT	
E1 activity – Environmental Compliance Studies Conduct required surveys for resource assessment. *This activity will continue through the 15% design development phase. All information obtained during the 15% design development phase is to be incorporated before termination of the E1 activity.*	
MAJOR STRUCTURES	
B1 activity – Structural Scoping Perform scoping site visit and develop a Structural Scoping Inspection report	
UTILITIES	
See S1 and UI activities, starting prior to the 15% submittal for utility locate and mapping requirements	
ROADWAY CROSS-SECTIONS	
Cross-sections incorporate preliminary Geotechnical recommendations	
Existing ground	
Proposed cross-section showing all structural section layers	
Curve widening, paved ditches, curbs, retaining walls, guardrail, etc. is incorporated for all alternatives	
Slope ratios for all slopes outside of subgrade shoulder	
Superelevation rates (m/m or ft/ft) between subgrade shoulders	
Station, design grade, subgrade, and original ground elevations	
Centerline symbol	
Show guardrail, retaining walls, and paved ditches	
Horizontal location of preliminary existing Right-of-Way limits	
Horizontal location of existing known utilities	
Grid elevations and offset distances	
RIGHT-OF-WAY	
R1 activity - Preliminary Right of Way Research Perform preliminary boundary and property ownership research for the project. Compile an electronic preliminary boundary exhibit.	
ESTIMATE	
Preliminary Cost Estimate for each alternative.	
Estimate to include all major pay items, including: earthwork, surfacing quantities, bridges, drainage items, retaining walls, guardrail, curbs, revegetation, etc.	
Include categories of minor items by lump sum (% of total)	
Preliminary cost estimate for bridges is on a square area basis	

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Unit Price Analysis for all major pay items	
Cost estimate may be provided in a spreadsheet format or Engineer's Estimate program	
DELIVERABLES	
Roll plots with horizontal and vertical alignments shown contiguous, all alternatives	
Title and typical section plan sheets (11"x17")	
Conventional plan symbols and abbreviations sheets	
Mass Haul Diagram (11"x17") for each alternative	
Plan and Profiles sheets show each alignment alternative (11"x17")	
Major public intersecting road plan and profile	
Cross-sections for each alignment alternative (11"x17")	
Preliminary quantity and cost estimates for each alignment alternative	
Preliminary floodplain analysis Report and technical memorandum	
Geotechnical Evaluation Memorandum	
Preliminary boundary exhibit (see Right-of-way checklist)	
Initial mapping and control sheet	
Structural Scoping Inspection Report	
Develop preliminary Design Technical memorandum – Detail the issues and concerns for the project	
Traffic Data	
Average Daily Traffic (ADT)	
Seasonal Average Daily Traffic (SADT)	
Peak-Hour Traffic	
Directional Distribution	
Composition of Traffic	
Accident data	
20-year projection of traffic	
Environmental E0 activity	
Trip Reports	
Initial mailing list	
Letter of intent	
Notice of Intent (EIS only)	
Draft Purpose and Need Statement (EA, EIS)	
Draft Alternatives to be studied (EA,EIS)	
Issues and concerns	
Environmental E1 activity	
Updated mailing list	
Various surveys and Resource Survey Reports	
Biological Assessment	
Cultural resources eligibility recommendations from resource surveys	
QA/QC certificate of compliance	

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15% Development Checklist	
FIELD REVIEW	
SC15 activity - Alignment Staking For 15% Field Review	
Alternative alignments staked on 100 foot (40 meter) stations for tangents and 50 foot (20 meters) for curves. As a minimum stake the beginning, end, and center point on short curves	
Topography is checked by visual observation, hand level, and cloth tape by designer at critical locations to confirm aerial topography	
Prepare agenda for field review	
Produce a master relined plan set with field review comments for inclusion in the 30% design	
Prepare trip report	
POST 15% ACTIVITIES *Activities to be conducted between the 15 and 30 percent reviews so data can be incorporated into the 30% PS&E package.*	
G2 activity – Geotechnical Investigation Earthwork, bridge foundations, retaining wall, landslide, and material source investigations *This activity will conclude after bridge foundation investigation (conducted after the final TS&L is approved)*	
S2 activity – Supplemental Survey Obtain Supplemental Survey Data and perform quality control. Note: These activities involve supplemental mapping and may include additional utility locations. These activities are not usually definable at the time that S1 activities are being accomplished. *This activity will continue through the 30% design development phase*	
V1 activity - Pavement and Subsurface Investigation Perform a pavement and subsurface investigation. Upon completion of the field investigation, submit a brief memo to the COTR that summarizes the investigation.	